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Correlates of Alcohol, Tobacco and Marijuana Use among Scottish Postsecondary Helping-Profession Students*

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ABSTRACT. *Objective:* There is limited information about the prevalence of recreational drug use over the postsecondary experience in Scotland. The purpose of this study was to investigate the patterns of alcohol, tobacco and marijuana use in postsecondary helping-profession students (medical, nursing, education and psychology) in Scotland in regards to gender, age and course of study. *Method:* The Queensland Alcohol and Drug Study Questionnaire was completed by students enrolled in helping-profession courses from 22 departments at universities and colleges in five Scottish cities. The sample consisted of 717 male and 2,537 female students. *Results:* A slightly ($p < .05$) higher percent of women (92.7%) consumed alcohol compared to men (90%), but men consumed significantly ($p < .001$) more drinks per week (26.7) compared to women (17.3). There was no difference between the two groups when U.K. recommendations of maximum limits for each gender were considered. About 50% of men and women consumed over 21 drinks and 14 drinks per week, respectively. A higher ($p < .05$) percent of men (42.5%) smoked compared to women (36.9%) and a higher ($p < .001$) percent of men (40.1%) consumed marijuana compared to women (24.1%). There was no difference in the quantity of tobacco consumed. For both men and women, the prevalence of alcohol and marijuana was highest 2 or 3 years before the maximum use of tobacco (students over 24 years of age). Male and female psychology students consumed the most marijuana. Psychology students, together with nursing students, also consumed the most tobacco. *Conclusions:* In view of the increasing prevalence of tobacco over the university experience, especially among nursing and psychology students, and heavier alcohol consumption among younger students, health education programs for Scottish postsecondary helping-profession students should expand from the recently introduced school programs. (*J. Stud. Alcohol* **58:** 435-444, 1997)

INITIAL USE of alcohol, tobacco and cannabis generally starts in the teenage years in the U.K. and North America. However, it is unclear if changes in the use patterns of alcohol and other substances occur among university students as they age, particularly in the U.K. where the legal drinking age (18 years) is lower than in the United States (21 years). In addition, it is not clear whether young adults continue to initiate substance use whilst attending universities or other higher education institutes; whether students in various courses of study have different drug use patterns; or whether patterns of use differ between male and female postsecondary students.

The *General Household Survey: 1992* (Thomas et al., 1993) in the U.K. suggests that 34% of the Scottish adult population smokes; also, for the U.K. as a whole, this report suggests the incidence of smoking increases as adolescents age. There is an increase in use between 16 and 19 years of age. Prevalence peaks in the 20-24 year old group and a slow decline in use occurs after this age. This pattern is found for both men and women.

Alcohol studies indicate that by age 16, 90% of youngsters in the U.K. will have consumed an alcoholic drink (Bagnall, 1988; Marsh et al., 1986; Plant et al., 1990a,b). This is equally true for Scottish teenagers (Bagnall, 1991; Plant and Foster, 1991). In the U.K. as a whole, 16-24 year olds consume the highest amount of alcohol. After 24 years of age there is a decline in alcohol use. Alcohol is the most commonly used recreational substance, with 93% of men and 84% of women in Scotland consuming alcohol at least occasionally (Thomas et al., 1993). For cannabis, 19% of those between age 20 and 26 years have used it at some point in their lives (Mott, 1989). A report by the Institute for the Study of Drug Dependence (1993), based upon several surveys, suggested that 8% to 30% of youth age 16 to 20 had used marijuana, while about 8% to 14% of youth in the 20 to 24 year old range had used this substance.

Various studies of substance use in the past few decades have generally shown gender to be a determinant of use. In the U.K. as a whole, the General Household Survey (Thomas et al., 1993) found that men in the 16-24 year old group consumed more than twice the units of alcohol compared to women (19.1 vs 7.3 per week). In addition, a higher percent of men (38%) exceeded their "sensible limit" (21 units for men and 14 units for women) compared to women (18%). For Scotland this survey reported the mean drinks consumed for all men were 16.9 per week compared to 4.6 for women.

Student populations

Several studies have focused specifically on student populations. Ghodse and Howse (1994) surveyed students from 13 medical schools in England, Scotland and Wales concerning tobacco, alcohol and other drug use. They

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reported that 86% of medical students consumed alcohol regularly and 17% exceeded the government's recommended limits for sensible drinking. They also found that 10% of students were current smokers, and that 35% of the sample had used cannabis at some point in their lives. Kory and Crandall (1984) found a positive correlation between age and all recreational drug use among a group of medical students in a large U.S. medical school.

Age differences

Chen and Kandel (1995) examined patterns of initiation, persistence and cessation of substance use among a sample of young adults in New York state. They found no initial use of alcohol or cigarettes after age 29. However, they found that the proportions of heavy users declined for alcohol and marijuana, but not for cigarettes, at this age. On the other hand, Engs and Rendell's (1987) study of Scottish nursing students in the Tayside region showed no difference in alcohol, tobacco or marijuana consumption between first- and last-year students: about 87% consumed alcohol, 36% tobacco and 5% marijuana.

Gender differences

Gender differences found in the general population are reproduced among students. Male university students are more likely to use a substance and in greater quantity compared to females (Engs and Hanson, 1990). Ghodse and Howse's (1994) study of medical students reported male students were more likely to smoke compared to female students: approximately 13% of the men and 10% of the women were smokers. Furthermore, 86% of medical students drank at least occasionally, with men more likely to consume alcohol and in higher quantities compared to women.

On the other hand, one study found few differences between male and female postsecondary students. Wardle and Steptoe (1991) studied 416 students in the U.K., as part of a larger European survey, and reported few differences between men and women regarding alcohol and tobacco use. Since most studies have found a gender effect, in recent years it has become common to examine men and women separately in regards to substance use with other variables.

Interdisciplinary differences

Only a few studies have examined patterns of substance use between students with different majors in the U.K. (Ashton and Kamali, 1995; Engs and Rendell, 1987; Ghodse and Howse, 1994). Golding and Cornish (1987) found that medical students consumed less alcohol, tobacco and cannabis compared to arts and agricultural students. However, there have been few reports that have surveyed drinking, smoking and cannabis use patterns among a variety of helping-profession students in Scotland. It would be of interest to determine the drug use patterns among this group of professionals in training.

Purpose and hypotheses

The purpose of this study was to establish prevalence of smoking, drinking and marijuana consumption for university and other postsecondary students majoring in the helping professions in Scotland. Information concerning these health-related behaviors is important for planning health promotion and prevention programs for those most at risk for abusing these substances.

The study tests the following null hypothesis: There is no significant difference between men and women in terms of alcohol, tobacco and marijuana use. There is no significant difference between age and between major for alcohol, tobacco and marijuana use for men or for women.

Method

Sample

The heads of departments at major universities and colleges in Aberdeen, Dundee, Glasgow, Edinburgh and Inverness that offered courses in the helping professions (medicine, nursing, education, psychology and social work) were contacted about participating in this study. Of the 28 departments that responded to an initial written inquiry, 22 were included in the study. Of the six who were not part of the sample, three nursing colleges agreed to participate but since they had postgraduate training only they were not asked to take part. One medical, one nursing and one education department at three separate institutions refused to participate because they did not think it proper to ask future physicians, nurses and teachers about illegal drug use such as marijuana.

It was requested that, if possible, a class from each year of study be sampled. Because of the divergence in types of curriculum this was not possible in all cases. For example, medical students at one university and nursing students at two colleges who were in their last year were not available as they were on clinical assignments.

The size of classes ranged from about 15 to almost 300 depending upon the field of study and the institution. Instructions, as sanctioned by the Indiana University Ethics committee concerning voluntary nature of participation, confidentiality and directions for nonparticipation, were projected on an overhead projector and read by the first author at 18 institutions. In four departments the instructor administered the questionnaires and were asked to follow the same procedure. Students who did not wish to participate in the study were asked to read during the testing time of about 15 minutes and to pass back blank questionnaires.

Students were told not to place any identifying marks on their papers in order to retain the anonymity of each questionnaire. In addition, the confidentiality of each of the departments and institutions was assured. Each student and institution was given a code number known only to the first author.

A total of 4,500 questionnaires were distributed in the classrooms. In small classes of under 50 students, all participated in the study. In large classes about 8% came back not completed. Of the total number distributed, 4,150 questionnaires were collected. Of this total number, 85 were incomplete and were thus eliminated, leaving a sample of 4,065 students.

Initial calculations showed that 799 students were in courses of study other than the helping professions. These included physical science, arts, commerce and other majors. They were eliminated, which left a sample of 3,266. Since the category of social workers was small (n = 162), they were combined with psychology majors. This resulted in a total sample of 3,254 (2,537 female) helping-profession students. The high percent of women in the sample is reflective of the high proportion of women found in the helping professions. Of the total sample, 17.4% were medical, 22.2% nursing, 31.3% education and 29.1% psychology majors. The mean age was 21.9 years: 26.5% were under age 19, 49.1% were between 19 and 24 years of age and 24.4% were over 24 years of age. In terms of year in school, 37.5% were in their first year, 31.6% in their second, 14.5% in their third and 16.4% in their fourth year or higher.

A limitation to this study is that this convenience sample may not be representative of all helping-profession students in Scotland.

Questionnaire

For items asking for quantity and frequency of substance use, the Queensland Alcohol and Drug Study Questionnaire (Engs, 1980; Engs and Rendell, 1987) was used. To determine alcohol consumption this questionnaire contains six quantify-frequency items from the Student Alcohol Questionnaire (Engs, 1994), such as, "How often do you usually drink lager or beer?" It includes the 18 items concerning alcohol-related behavior, such as, "Over the past year have you experienced a hangover?" from this same questionnaire. In addition, the instrument contains 10 items regarding other drug uses, such as, "When you use marijuana how many joints do you usually smoke?" Excluding demographic factors, the instrument, with the original sample of Australian students, demonstrated a Spearman-Brown reliability coefficient of .89. Cronbach's alpha reliability was .86. Because this present study was done with a wide variety of Scottish students, the reliability calculations were repeated. For the whole sample the Spearman-Brown reliability coefficient for unequal lengths was .78. The Guttman's split half technique revealed a reliability coefficient of .74, and the Cronbach's alpha revealed a coefficient of .70.

Calculations: Mean consumption per week

Several methods for calculating the amount of alcohol consumed are in common use. They include calculating the mean grams or ounces of absolute alcohol or the mean drinks or units per week or per day. In self-report studies, determining grams or ounces is often an imprecise calculation as it is based upon recall. Moreover, people tend to underestimate the amount they have consumed (Thomas et al., 1993).

Therefore, in recent years, it has become more common to calculate the mean number of drinks, or units, per week or day of all alcoholic beverages consumed (Engs, 1990; Engs and Hanson, 1994; Engs et al., 1990; Gaziano et al., 1993; Thomas et al., 1993). Calculations for this method are based upon the "rule of thumb" that an average glass of pub beer (12 ounces) is roughly equivalent to an average size glass of wine (5 ounces) or shot of distilled spirits (1.5 ounces) in terms of grams (approximately 13) of absolute alcohol (Thomas et al., 1993).

For the analyses the instrument assessed the usual frequency and quantity of beer, wine and spirits, cigarettes and marijuana consumed by student. The frequency response categories were assigned constant values so as to be able to calculate units per week (every day = 7.0, at least once a week but not every day = 3.5, at least once a month but less than once a week = 0.5, more than once a year but less than once a month = 0.12, once a year or less or not at all = 0). To compute the drinks of alcohol consumed on a weekly basis, a mean score was calculated by multiplying the quantity by the recoded frequency weight for each beverage type and summing the three scores. For tobacco and marijuana the frequency values were multiplied by the quantity the student reported he/she usually consumed.

Calculations: Alcohol, tobacco and marijuana consumption ranges

The range for "moderate" and "heavier" alcohol, tobacco and marijuana ingestion for the total sample was calculated as follows.

Alcohol. Several recent reports suggest that up to 21 drinks per week for men and 14 drinks for women is not associated with acute or chronic health consequences (Boffetta and Garfinkel, 1990; Engs and Aldo-Benson, 1995; Garg et al., 1993; Gaziano et al., 1993). In the U.K. these limits are the recommended guidelines for "moderate" alcohol consumption (Thomas et al., 1993). Recently even higher levels have been recommended by the British government as designating moderate drinking (Inter-Departmental Working Group, 1995). However, because this study was conducted when the old guidelines were still in effect and because these higher guidelines are being disputed, the older U.K. limits will be used. "Heavier" drinking or "above the maximum recommended limit" for this study is considered above 14 drinks per week for women and 21 drinks per week for men.

Tobacco and marijuana. Tobacco consumption of 140 cigarettes per week, or 20 or more per day, was considered

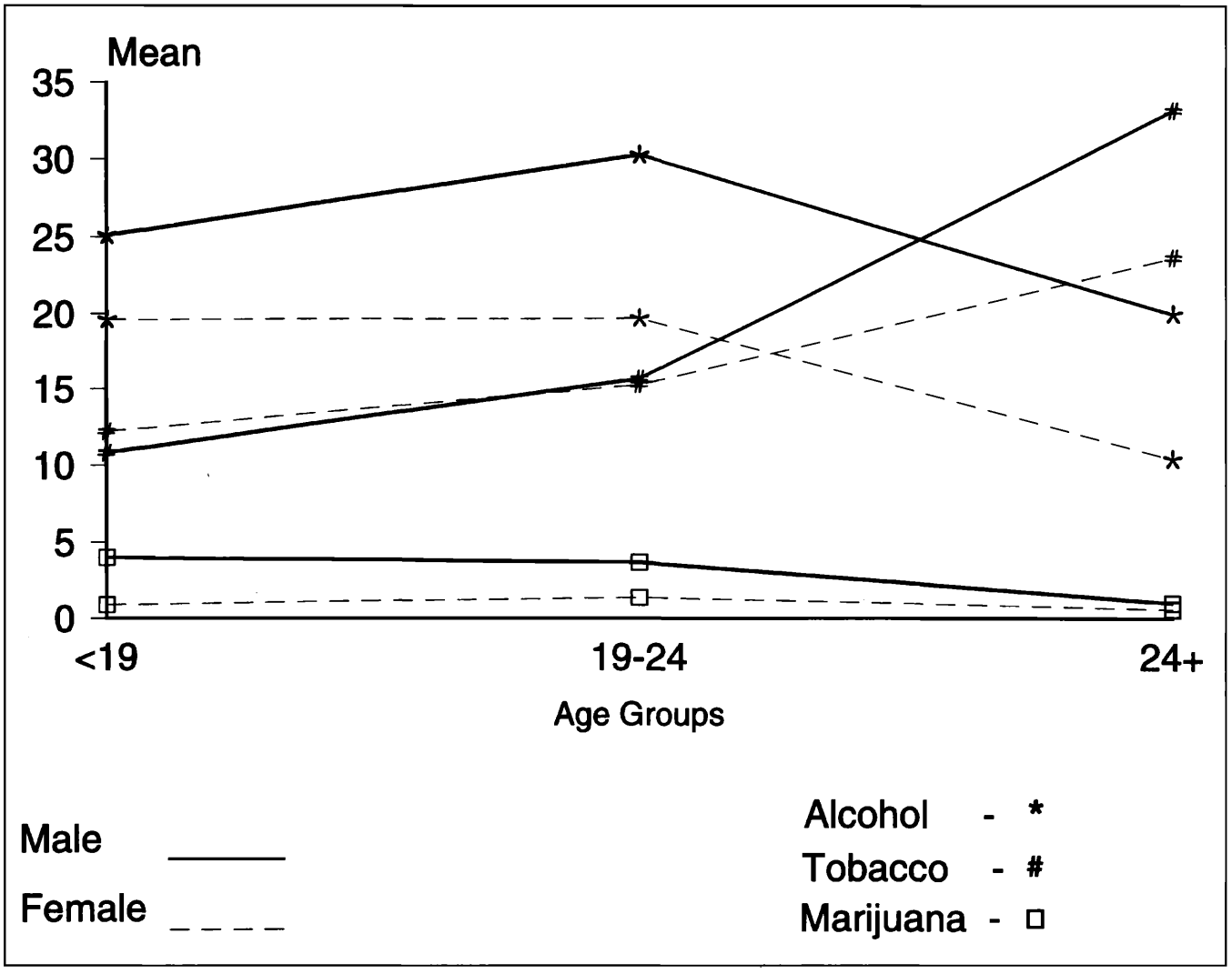

FIGURE 1. Mean drinks, cigarettes and joints consumed by men and women in each age group

"heavier" consumption. More "moderate" consumption was less than 140 cigarettes, as has been used in other studies (Engs and Rendell, 1987; Ghodse and Howse, 1994). For marijuana, since there is little literature that suggests "moderate" consumption levels, below the mean for the total sample was considered moderate consumption and above the mean, heavier consumption.

SPSS (Norusis, 1990) was used for data analysis. The crosstabs, *t* test, ANOVA with post hoc Scheffé and MANOVA with power analyses from this package were utilized on the Indiana University's UNIX mainframe computer.

Results

Gender

Results of the chi-square analyses suggest a difference between men and women in prevalence of use of various substances. A slight statistically significant difference ($\chi^2 = 5.6$, 1 df, $p < .05$) between the percent of men (90.0) and women (92.7) who had consumed alcohol during the previous 12 months was found. However, it may not be meaningful as it could have resulted from the large differences in sample sizes between men and women. Men consumed significantly ($t = 9.6$, 926.4 df, $p < .001$) more drinks per week (26.7 ± 25.6) compared to women (17.3 ± 18.1). When gender differences for U.K. maximum recommended alcohol consumption are taken into account, (no more than 14 drinks per week for women and 21 for men), chi-square results showed no significant difference. About 50% of the sample were consuming over this limit.

For tobacco, 42.5% of men compared to 36.9% of women smoked cigarettes at least once during the previous 12 months ($\chi^2 = 7.3$, 1 df, $p < .05$). However, *t* tests did not reveal a significant difference in the mean number of cigarettes consumed. The mean ($\pm$SD) for the total sample was 16.5 ± 39.3.

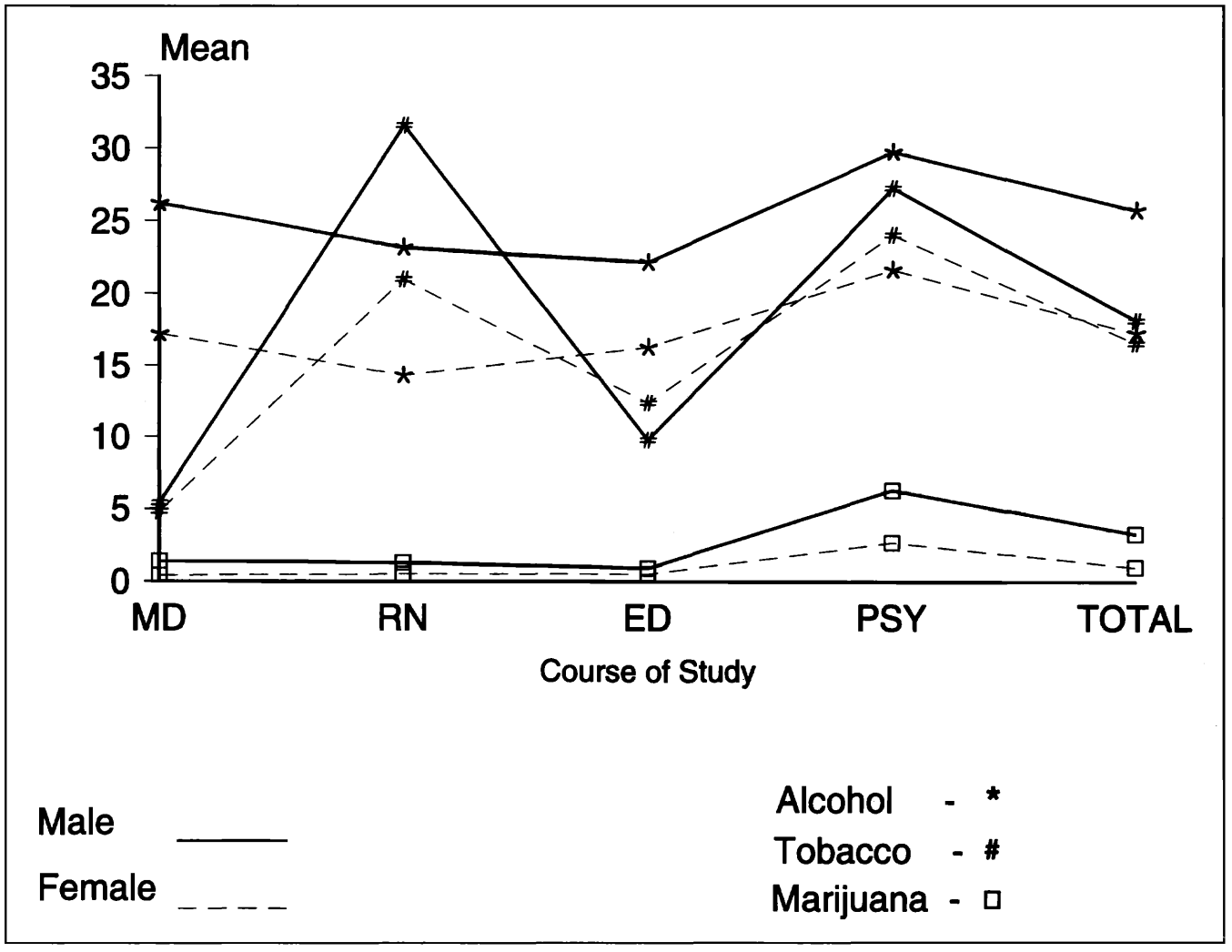

FIGURE 2. Mean drinks, cigarettes and joints consumed by men and women in each course of study

For marijuana, a significantly ($\chi^2 = 74.7$, 1 df, $p < .001$) higher percent of men (40.1%) consumed marijuana compared to women (24.1%). Men consumed significantly ($t = 7.2$, 923.4 df, $p < .001$) more joints (3.2) compared to women (1.1).

Because of the high proportion of women in the sample, and the differences in men and women in regards to alcohol, tobacco and marijuana use, separate analyses for each gender for age and course of study are reported.

Figure 1 illustrates the difference in mean scores between the three age groups for alcohol, tobacco and marijuana use for both men and women. Figure 2 illustrates the mean scores for each course of study for each gender.

Men

Table 1 shows the results of chi-square analysis of the percent of men consuming various levels of alcohol. A significant difference ($\chi^2 = 9.7$, 4 df, $p < .05$) was found, with a smaller proportion of the oldest group consuming over 21 drinks per week, compared to the two younger groups. There was also a significant difference ($\chi^2 = 25.4$, 6 df, $p < .001$) among the different courses of study. A higher percent of psychology students consumed cover 21 drinks per week compared to the other groups.

For mean drinks per week, the results in Table 2 of the 3 (age) by 4 (course of study) MANOVA revealed a significant difference due to age only ($p < .05$). The post hoc Scheffé test revealed that the differences in the mean drinks per week occurred between the over 24 year old (20.0 ± 21.7) and the 19-24 year old (30.3 ± 29.0) and the under 19 (25.1 ± 19.9) groups (see Figure 1). There was no significant difference due to course of study.

. Chi-square results revealed a significant difference ($\chi^2 = 22.7$, 4 df, $p < .001$) between the age groups, with the oldest group more likely to smoke and consume over 140 cigarettes per week. There is also a significant difference ($\chi^2 = 47.9$, 6 df, $p < .001$) among the different courses of study, with a higher proportion of male nursing students consuming over 140 cigarettes per week (see Table 1).

TABLE 1. Chi-square results showing the percent of students in different age groups and majors consuming various levels of alcohol, tobacco and marijuana for both the female and male population among Scottish helping-profession students

	MEN								
	Alcohol			Tobacco			Marijuana		
	None	≤21	>21	None	<140	140+	None	<3.3	>3.3
Age (years)									
<19	7.1	40.3	52.6*	73.5	24.0	2.6‡	60.7	17.9	21.4‡
19–24	11.4	35.0	53.7	67.2	27.4	5.4	61.2	20.3	18.4
>25	10.5	47.4	42.1	62.5	23.0	14.5	78.9	12.5	8.6
Major									
MD	14.2	41.7	44.1‡	76.9	22.7	0.4‡	74.5	15.8	9.7*
RN	10.1	42.4	47.5	62.6	23.2	14.1	78.8	13.1	8.1
ED	9.9	44.0	46.2	79.1	18.7	2.2	85.7	5.5	8.8
PSY	6.4	33.9	59.6	58.2	31.1	10.7	44.6	25.7	29.6
	WOMEN								
	Alcohol			Tobacco			Marijuana		
	None	<14	>14	None	<140	140+	None	<1.3	>1.3
Age (years)									
<19	7.4	37.0	55.6‡	74.4	22.1	3.5‡	77.6	16.9	5.6‡
19–24	7.2	39.3	53.5	70.6	26.0	3.4	76.0	16.3	7.7
>25	7.5	66.7	25.8	71.6	20.2	8.3	92.2	5.0	2.8
Major									
MD	15.3	37.2	47.5‡	83.1	16.6	0.3‡	84.1	12.5	3.4‡
RN	7.2	53.9	38.8	70.3	24.1	5.6	87.2	9.3	3.5
ED	5.9	49.8	44.3	77.4	19.3	3.3	86.2	10.6	3.2
PSY	5.6	36.0	58.4	60.2	32.1	7.7	64.6	22.4	13.1

*$p < .05$; ‡$p < .001$.

Note: Consumption levels are: Alcohol, none = 0 drinks per week; ≤21 = 21 or fewer drinks per week; >21 = more than 21 drinks per week; Tobacco, none = no cigarettes per week; <140 = less than 140 cigarettes per week; 140+ = 140 or more cigarettes per week; Marijuana, none = no joints per week; <3.3 = less than 3.3 joints per week; >3.3 = more than 3.3 joints per week. Academic majors are: MD = medical, RN = nursing, ED = education, PSY = psychology.

The results in Table 2 of the 3 (age) by 4 (course of study) MANOVA examining mean tobacco use indicated a significant ($p < .001$) difference between course of study only. Post hoc analysis revealed more cigarettes per week were consumed by both nursing (31.6 ± 55.0) and psychology (27.3 ± 51.6) compared to medical (5.4 ± 9.1) and education (9.8 ± 28.4) students.

A significant difference ($\chi^2 = 18.6$, 4 df, $p < .001$) was found between the different age groups in terms of marijuana consumption. A smaller proportion of the oldest group consumed marijuana compared to the other groups. There was also a significant difference ($\chi^2 = 91.3$, 6 df, $p < .001$) in the proportion of student consuming marijuana among the different courses of study (see Table 1). Three times as many psychology students consumed marijuana compared to the other groups.

Table 2 shows a significant difference in the amount of marijuana consumed between the different age groups with fewer joints per week consumed by the over 24 year of age group (1.0 ± 3.8) compared to the 19-24 year (4.0 ± 10.1) and the under 19 year old (3.7 ± 10.8) group. For course of study, psychology students consumed more joints per week (6.3 ± 13.3) compared to all other majors.

Women

Chi-square results suggest a significant ($\chi^2 = 166.9$, 4 df, $p < .001$) difference between the three age groups in terms of drinking patterns for all female students. Fewer students of 24 years or older consumed over 14 drinks per week compared to the other age groups (Table 1). Differences were also found among the different courses of study ($\chi^2 = 93.2$, 6 df, $p < .001$).

For the total sample of women, the results of a 3 (age) by 4 (course of study) MANOVA reveals a significant difference between the age groups ($p < .001$) and course of study ($p < .05$) for mean drinks consumed per week (see Table 3). The post hoc Scheffé test reveals that the over 24 year olds consumed fewer drinks per week (10.4 ± 14.7) compared to the 19-24 year (19.7 ± 18.9) and the under 19 (19.6 ± 17.8) groups (see Figure 1). The post hoc test revealed the significance occurred between psychology students who consumed the most (21.7 ± 20.0) drinks per week and medical, nursing and education students who consumed 17.2 ± 18.9, 14.3 ± 15.4 and 16.3 ± 17.5 drinks per week, respectively.

A significant difference between age groups ($\chi^2 = 31.8$, 4 df, $p < .001$) was found for tobacco use among all female

TABLE 2. Results of 3 (age) by 4 (course of study) MANOVA among all men in terms of mean drinks, cigarettes and joints of marijuana per week

	SS	df	MS	F	Power
Alcohol					
Source of variation					
Within cells	452596.19	705	641.98		
Course of study	3211.33	3	1070.44	1.67	0.4
Age	7648.00	2	3824.00	5.96*	0.9
Course of study by age	1216.50	6	202.75	0.32	0.1
Constant	471141.17	11	1685.91	2.63*	
Tobacco					
Source of variation					
Within cells	1157006.12	705	1641.14		
Course of study	54235.81	3	18078.60	11.02‡	0.9
Age	9676.96	2	4838.48	2.95	0.6
Course of study by age	19749.99	6	3291.67	2.01	0.7
Constant	134901.85	11	12263.80	7.47‡	
Marijuana					
Source of variation					
Within cells	60661.36	705	86.04		
Course of study	2124.43	3	708.14	8.23‡	1.0
Age	375.83	2	187.92	2.18	0.4
Course of study by age	594.22	6	99.04	1.15	0.5
Constant	5883.34	11	534.85	6.22‡	

students. The highest percent consuming 140 cigarettes or more per week was among the oldest group. Likewise there was a significant difference ($\chi^2 = 87.7$, 6 df, $p < .001$) between courses of study with medical students least likely and psychology student most likely to smoke (see Table 1). For tobacco, the MANOVA results (see Table 3) suggest a significant difference ($p < .001$) in mean consumption between the different age groups and between course of study. There was no significant interaction between course of study and age. The post hoc test revealed that students over 24 years of age consumed more cigarettes (23.5 ± 48.0) than did students aged 19-24 years (15.3 ± 35.3) and under 19 years (12.2 ± 43.2). For course of study, the post hoc test revealed that the highest cigarette consumption per week was among the psychology (24.1 ± 45.6) and nursing (20.9 ± 43.7) students compared to the education (12.4 ± 34.3) and medical (4.8 ± 17.8) students (see Figure 2).

Among all female students, there was a significant difference between age groups ($\chi^2 = 78.6$, 4 df, $p < .001$) and majors ($\chi^2 = 159.6$, 6 df, $p < .001$) in terms of marijuana smoking (Table 1). There was no significant difference between age groups for mean joints of marijuana consumed per week. However, there was a significant difference ($p < .05$) between courses of study (see Table 3). The post hoc Scheffé suggests that the difference was between the psychology students who consumed the highest amount of marijuana (2.7 ± 12.2) joints per week compared to medical, nursing and education students who consumed under one joint per week.

Discussion

There was a difference between men and women in substance use as has been found in many similar studies. Men and women consumed alcohol at about the same frequency, but men consumed more alcohol than women. About 50% of both men and women consumed over the maximum recommended limit in the U.K. of 21 drinks per week for men and 14 drinks per week for women. These results suggest that, in this sample of Scottish students, in terms of actual drinks per week consumed by men and women, there is no closing of the gap between men and women in terms of alcohol consumption.

For tobacco the differences in consumption were small between men and women. Although men smoked more frequently, when women smoked, they consumed quantities similar to those of men. These results support general studies in the U.K. that suggest that the gap between men and women is narrowing for smoking (Thomas et al., 1993). This is similar to Ashton and Kamali's report (1995) which suggests that female students consume even more cigarettes than male students.

For both men and women, the prevalence of alcohol and marijuana use was highest 2 or 3 years before the maximum use of tobacco (students over 24 years of age). This was also found by Chen and Kandel (1995). It is likely that students start the use of substances in secondary school and perhaps continue to increase their use until education, maturation, experience or increased responsibility and commitment to their future careers cause them to taper off. The exception is

TABLE 3. Results of 3 (age) by 4 (course of study) MANOVA among all women in terms of mean drinks, cigarettes and joints of marijuana per week

	SS	df	MS	*F*	Power
Alcohol					
Source of variation					
Within cells	777234.67	2525	307.82		
Course of study	10318.22	3	3439.41	11.17‡	1.0
Age	4265.15	2	2132.57	6.93*	0.9
Course of study by age	2147.09	6	357.85	1.16	0.5
Constant	54756.51	11	4977.86	16.17‡	
Tobacco					
Source of variation					
Within cells	700749.51	2525	1465.64		
Course of study	63688.72	3	21229.57	14.48‡	0.8
Age	10657.47	2	5328.73	3.64*	0.4
Course of study by age	3694.77	6	615.79	0.42	0.3
Constant	149474.00	11	13588.55	9.27‡	
Marijuana					
Source of variation					
Within cells	112557.89	2525	44.58		
Course of study	1852.76	3	617.59	13.85‡	1.0
Age	155.39	2	77.70	1.74	0.4
Course of study by age	306.93	6	51.15	1.15	0.5
Constant	3128.25	11	284.39	6.38‡	

*$p < .05$; ‡$p < .001$.

tobacco which has the highest use among the oldest group. Stolerman and Jarvis (1995) conclude that evidence "clearly identifies nicotine as a powerful drug of addiction comparable to heroin, cocaine and alcohol." Unlike these other drugs, nicotine does not interfere with critical thinking skills needed for scholastic work.

Marijuana is the most commonly used illicit drug. A survey conducted in 1991 in the north of England found that lifetime prevalence of marijuana use was 32% in a cohort of 14-15 year olds (Measham et al., 1994). It is likely that experimentation is continuous during the early years of postsecondary education.

Most people in Scotland drink, but students and young people, in general, are known for heavy consumption compared to adults (Thomas et al., 1993). With age heavy drinking slowly decreases for most people, including this sample of postsecondary students.

In terms of course of study, both male and female medical, nursing and education students were less likely to consume over the maximum amount of recommended levels of alcohol for their gender compared to psychology students. Fewer medical students were considered heavy drinkers compared to the other groups. For men there was no difference in the mean units consumed per week. However, female psychology students drank the most while female medical, nursing and education students consumed the least. Medical and education students were least likely to smoke for both genders. Both male and female nursing students consumed the most tobacco followed by psychology students. Psychology students were most likely to consume marijuana compared to medical, nursing and education students.

These results support Golding and Cornish (1987) who found higher levels of tobacco and alcohol use among nonmedical students from arts, science and agriculture than among medical students. Heavy smoking for nursing students (36% smokers) in the Tayside region of Scotland was also found by Engs and Rendell (1987).

There are several possible explanations for differences in course of study. Perhaps medical, nursing and education students are consuming alcohol more moderately as a result of their personal postsecondary educational experiences. However, this does not appear to be the case for smoking. Although psychology students are most likely to smoke, the high rate of tobacco use among nursing students may be the result of more stress. Nursing students often work in a clinical setting while engaged in formal education, and nurses have been found to have more stress than others in a hospital setting (Rees and Cooper, 1992).

The high use of tobacco for female nursing students could be the result of stress caused by their feelings of a lack of control over their environment. In addition, some qualitative research has indicated that women who have less control over their life are more likely to smoke (Graham, 1987; Oakley, 1989). However, the latter would not explain the high use among males nurses.

Another argument is that because of personality differences students who go into a particular course of study are more, or less, at risk for certain use of substances regardless of age. In the U.K. alcohol consumption is much more wide-

spread and socially acceptable than smoking, which in turn is more widespread and acceptable than marijuana consumption. Individuals who apply for medical school tend to be conservative; moreover, they are selected through an interview process (McManus and Richards, 1984a,b). Golding and Cornish (1987, p. 295) found that "medical students tended to be more conventional/cautious/tender minded" compared to nonmedical students. They also had a less risk-taking approach to life.

Both male and female medical students consumed less tobacco than nursing students. Although both are in health care fields and presumably would have some awareness of the dangers of smoking, a possible explanation for the high level of smoking among nursing students could be social class differences. To some extent the observed differences between smoking, drinking and marijuana use between majors might be due to underlying social class differences between students of these disciplines. Studies in the U.K. have suggested that the higher the socioeconomic level the less likely the person is to smoke (Thomas et al., 1993). At the same time, children of managerial or professional families in the U.K. have an advantage over lower socioeconomic groups in access to postsecondary education. British youth who are from a lower socioeconomic background are more likely to enter nursing and education colleges while those from higher socioeconomic backgrounds, as determined by father's occupation, are more likely to enter university (Egerton and Halsey, 1993).

It is interesting to see differences relative to courses of study. It could be argued that students who go into a particular course of study are more or less at risk for use of certain substances regardless of age. More research needs to be undertaken to determine factors that are determinants of patterns of alcohol, tobacco and marijuana use in regards to career interests.

School health programs at the primary and secondary level aim to develop the full potential of the school as a setting for health promotion. The Health Education Board for Scotland encourages the provision of preventive services and devises policies designed to create environments conducive to good health (Tannahill, 1994). Because of the increased prevalence of tobacco as students age, it is important to implement health promotion programs among helping-profession students throughout their higher education experience. This is particularly true for nursing and psychology students. In view of the high mortality rate from chronic diseases related to smoking, the Health Education Board for Scotland might consider the continuation of the school program on the post-secondary level.

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